The marine zoologist will find much valuable matter in the interesting reports by Messrs. Danielssen and Koren of the Asteridea, collected in the Norwegian North Atlantic Expedition. These papers are a *résumé* of the complete volume, which will appear later on as part of the Collective Report of the Expedition. Of the 20 genera and 40 species collected, 4 genera and 11 species are new to science. Numerous specimens of the Pedicellaster found in West Greenland, and described by Dr. Sladen as new, to which he gave the specific name of Palæocrystallus, is identified by Dr. Danielssen as *P. typicus* of Sars. Extreme importance attaches to the discovery and careful examination of a specimen of an asteroid—unfortunately the only one secured—which differs from others of the family by having a central dorsal appendage, generally erect, but capable of motion. This curious Echinoderm, to which Messrs. Danielssen and Koren give the name *Hyaster mirabilis*, is conjectured by them to represent a larval or developmental stage of the Crinoidea, and after a careful study of this stalk-like appendage they hazard the conjecture that further investigations may lead to the discovery that the Asteridea are in fact developed from the Crinoidea. Equally interesting, if less important, is the re-discovery of the Greenland "Clusterpolyp" of Ellis, the "*Zoophytum grönlandicum*" of Mylius. The specimens examined by these earlier naturalists have long disappeared, and for more than a hundred years no others were found. The *Challenger* Expedition brought back several forms of an Umbellula, one of which Prof. Kölliker considered to be of the same species as the lost specimens of Ellis and Mylius; the Norwegian naturalists are of opinion, however, that all the specimens found are mere varieties of *Umbellula encrinus*, to which they ascribe a wide geographical range.

In conclusion, while we desire strongly to recommend the *Nyt Magazin*, it may not be out of place to mention that several of the most interesting papers on local Norwegian geology are written in German, and that the highly important results of the recent Norwegian North Atlantic dredgings are given by Dr. Danielssen in English, under the title of a "Preliminary Report" of the Expedition. The magazine, which is under the joint editorship of Professors Kjerulf, Danielssen, Mohn, and Hiortdahl, is printed in the Latin type now so generally used in the Norwegian press, and is copiously illustrated by well-drawn woodcuts, and excellent plates of the animals described.

## OUR BOOK SHELF

*Acta Mathematica.* (Stockholm. Various dates.)

THIS journal, which has already won for itself the reputation of being one of the leading mathematical journals, not of the North merely, but of the world, sprang into life at the end of 1882, is published at Stockholm, and has all along been under the able editorship of Prof. G. Mittag-Leffler, assisted by all the foremost mathematicians of Sweden, Norway, Denmark, and Finland. Its object is stated to be to gather and publish such mathematical works as contribute to the development of the science by the novelty either of the results obtained or of the methods employed.

The seven volumes which have been issued contain papers by some of the foremost Continental mathematicians: the sole contribution, we believe, in English is furnished by an American writer, Mr. G. W. Hill, and is entitled "On the Part of the Motion of the Lunar Perigee which is a Function of the Mean Motion of the Sun and Moon" (this paper occurs in vol. viii., which is in course of publication). There are in all, in the complete volumes, 107 papers, in almost every department of the science.

It may be in the recollection of our readers that Oscar II., King of Sweden and Norway, who is styled "Special Protector of the Journal," has instituted a great mathematical prize for an important discovery in higher analysis, the particulars of which have appeared in full detail in our columns (vol. xxxii. p. 302); the prize works are to be published in the *Acta*.

*The Methods of Glass-Blowing.* By W. A. Shenstone. (Rivingtons, 1886.)

NOT only the student who is entering, or has just entered, that mystic land of chemical research, but also the ordinary student of chemistry who wishes to be more than a mere beginner, or a book-chemist, will hail with great joy the appearance of this little book on glass-blowing. We have not many good professional glass-blowers in this country, and, as the author says, it is a difficult if not impossible thing to get any instruction in glass-blowing; and, as a result, the great bulk of chemical students are as dependent on the dealers in glass ware as the bulk of amateur photographers are on dry plates and other things in that connection.

Most students even in our hardest working laboratories have some time to spare in which they might practise some of the more useful and simple methods of making glass apparatus mentioned and described in this little book.

Apart from the immediate utility of being able to make one's glass apparatus in the laboratory, and the help it is in almost any form of chemical or physical research, it cannot fail to be also indirectly useful to a student on his transplantation to a works or the superintendence of some technical operation, and will give him what is so very desirable, in addition to that of the purely chemical manipulation of analysis, a feeling of confidence in overcoming mechanical difficulties.

In the introduction is a description of a suitable working-place, blow-pipe, and bellows—things which are seldom to be found fit to use in our laboratories—and the blow-pipe flames; after which the varieties of glass mostly used, and the actual operations involved in the construction of most glass apparatus, in which glass tubes are the main parts, are very plainly described, being also in many cases illustrated with diagrams of the different stages. The last chapter is devoted to "calibrating and graduating glass apparatus," operations we think every student who gets as far as quantitative analysis should be able to perform in a decent manner.

We most thoroughly recommend this little book to students who intend to become chemists, and hope the proportion of those who can blow a respectable bulb will soon be increased. At present it is about ·1 per cent.

## LETTERS TO THE EDITOR

[*The Editor does not hold himself responsible for opinions expressed by his correspondents. Neither can he undertake to return, or to correspond with the writers of, rejected manuscripts. No notice is taken of anonymous communications.*

[*The Editor urgently requests correspondents to keep their letters as short as possible. The pressure on his space is so great that it is impossible otherwise to insure the appearance even of communications containing interesting and novel facts.*]

### Two Hours with a "Subject Index"

THERE has appeared within the year, under the title of "A Subject-Index to the Modern Works added to the

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Library of the British Museum in the Years 1880-85," the latest of the series of indexes published under the auspices of our great national library. Having recently had occasion to consult the same with reference to certain biological works, I experienced so much difficulty in finding what I wanted, that I thought it worth while to inquire more fully into the trustworthiness of the volume as an aid to the working naturalist. I append my notes, in the interest of workers in a field the literature of which is already overburdened.

The book is printed in unnecessarily large type, whence there results a ponderous volume of 1044 pages quarto. Upon the immensity of the task before the bibliographer set to compile such a work I need not comment. If the duty be well performed, there can only result a product useful to all, and helpful to the specialist; if otherwise, confusion becomes confounded, and there ensues to the worker loss of time, if not actual disaster.

Printers' errors and minor inaccuracies are to be expected in a work of the kind, and any such compilation must of necessity be faulty. It is not surprising, therefore, to find "travel" for "translation" in recording the title of Scott Russell's work, on p. 1016. Other similar defects could be quoted, but why are the press-marks occasionally omitted? surely they are next in importance to the titles themselves? The compositor cannot be at fault here.

The compiler sets forth his scheme in a short preface, by no means a bad one if followed. One of the chief provisions reads thus: "Headings and sub-headings are in strictly alphabetical order; precedence being given under each to the larger and more important works." It is in the execution of this self-imposed dictum that the compiler is seen at his best. Who is to be the judge of the relative merits of the collected works, and what is to be the standard of comparison? Presumably, the compiler performs the difficult task in person, but it is indeed well that his method is not revealed, for Huxley's "Crayfish" heads the list of general works upon Mollusca (p. 653), and Miss Buckley's "Life and her Children" that upon Micro-organisms. The thing must be a joke! Nothing of the kind!! "Corallinen Algen" brings up the rear of Corals (p. 212), while "Les Batrachospermes" are exalted to an equality with the Batrachians—a truly novel means this of demonstrating the unity of the biological sciences. The aforenamed inaccuracies amount almost to incredibilities, and it is difficult to realise that they are perpetrated in earnest. It is inconceivable that they can have resulted from mere carelessness; but, even were that so, the fact that they exist at all would be sufficient in itself to disqualify the compiler. We can only regard them as the natural outcome of giving to one man the work of half a dozen; they disfigure the work, and shake our confidence in much that remains. A little less pardonable, perhaps, is the relegation of "Der Tasman-Gletscher" to the Column Tasmania.

The choice of headings is often ill-advised. Four works are recorded upon the Polyzoa; these are equally divided between Polyzoa and Bryozoa, to neither of which headings is there a cross-reference. Writings upon organisms in air generally are distributed between sections Air and Atmosphere, Micro-organisms, and Bacilli and Bacteria, with no cross-references. Papers dealing with the broadest generalisations and the subtlest of details are muddled together regardless of system; while under Micro-organisms there is a cross-reference to Infusoria, sole possessor of which department is Kent's well-known Manual. Section Palæontology is especially introspective. It is divided into the subheads General, Bibliographical, Collections of Fossils &c., Fossil Fauna, and Flora—a sufficiently inconsistent arrangement in itself. Conspicuous among the general works is Brongniart's "Recherches sur les graines fossiles silicifiées." A knowledge of the publications of his own department ought certainly to be expected of the compiler, through whose hands the covers of the said works must surely pass. But no; for while there has been recorded under the last-named heading Rupert Jones's "Catalogue of Fossil Foraminifera," we look in vain for the companion volumes of Hinde and Lydekker, both of which were published within the period embraced. There is here something akin to contempt for authority! Marsh's "Odontornithes," divorced from Palæontology, finds a home among the Birds.

Having found that the leading tenet of the scheme was violated—that relating to the precedence of important works—I turned next to the second one. It reads: "All books are, so far as possible, grouped together according to their language, in the following order—English, French, German, Italian. . . . There are, however, some deviations from this system—for example, in the history of each country the titles follow each other in chronological sequence, irrespective of language." How the two methods of arrangement thus vaguely formulated are to be simultaneously adopted, we are not informed; and in this ingenious attempt to combine two schemes into one neither has been adhered to—both have suffered. A cursory glance at some of the more important sections, *e.g.* Birds, shows that the conditions have not been in the least fulfilled, so far as pertains to precedence of language; while, to go afield, we find under Clergy, Priesthood, &c., a unique arrangement in which the languages run thus—Spanish, English, German, French, Italian, English, *ad finem.* Where, here, is the professed patriotism? It deserts the author under the inspiration of Clergy, Priesthood, &c., and leaves him reckless. What now of the chronological sequence? One turns instinctively to various historic headings. In none of those examined did I find the exception to be the rule.

The major scheme nullified, the preface becomes a blank; but the details of the superstructure are no more to be relied upon than is the foundation itself. Under Insects, to which the reader is referred from Entomology, there are titles in abundance in which the two catchwords occur; but he looks in vain for references to the fact that the majority of entomological papers are scattered among Coleoptera, Diptera, Hymenoptera, Lepidoptera, Ants, Wasps, Bees and Bee-keeping, and other headings. The Colorado Beetle figures under that heading and under Potato, but not under Coleoptera; while, to complicate matters, a German and an English work upon the subject appear under Potato, the place of the former being, under Colorado Beetle, usurped by a Spanish rival. Fish and Fisheries embraces all branches down to Oyster-Culture, but why not Salmon Fisheries? It appears to suffice that they should take shelter under Salmon, with no cross-references. A special heading is set up for Angling, but several definite works thereon are to be found only under Fish and Fisheries, no references being given under Angling.

Titles of works are not unfrequently repeated, and that unnecessarily. For example: Morris's "Letters about Birds" occurs under Birds (sub-headings—General, and Great Britain and Ireland); Dixon's, Swaysland's, and Watkins's books are not under their appropriate headings; while Patterson's "Birds, Fishes, and Cetacea frequenting Belfast Lough," which should be under Fauna, Local, is misplaced. Under the last-named heading Canon Tristram's "Fauna of Palestine" appears beneath sub-section Italy—the compiler seems doomed to disaster in his relations with the clergy. In one or two cases where comprehensive titles occur, a process of dismemberment has crept in. For example: Romanes' "Jelly-Fish, Star-Fish, and Sea-Urchins" is to be found under Star-Fish and Sea-Urchins, with the title mutilated beyond recognition, but not at all under either Jelly-Fish, Medusa, or Echinoderm; Scott Russell's "Wave of Translation in the Oceans of Water, Air, and Ether," to which allusion has already been made, occurs, also with a misquoted title, under Water, but under neither Ether nor Air and Atmosphere.

Such are the results of an attempt to gauge the working capacity of the "Index" mainly from a single stand-point. I leave other specialists to inquire for themselves. It has been said that this "work proves the ability and industry of its compiler, and that the Trustees are anxious to make the treasures of the great library a success." Granted the good intentions of the governing body and the industry of the compiler; of the rest the reader must judge for himself—I refrain from further comment thereon. It cannot, however, be admitted that the compiler has done his best; errors cannot be avoided where non-technical hands are applied to technical work, but slovenliness is ever intolerable. I submit that a distribution of labour is demanded for the success of the next essay of the kind.

JUSTITIA

## The Origin of Species

In a recent issue of NATURE (Nov. 25, p. 77) Mr. Catchpool writes:—"Is it, or is it not, the fact that allied species, which are confined each to a particular island, prove, when brought together, far less frequently infertile than species, equally dissimilar, which had lived in the same district, might be expected to prove? On the answer to this question depends, as far as I

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